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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/791,885	03/04/2004	Hideki Kuwajima	2004_0280A	5187

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EXAMINER

HANNON, THOMAS R

ART UNIT

PAPER NUMBER

3682

DATE MAILED: 11/03/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/791,885

Applicant(s)

KUWAJIMA, HIDEKI

Examiner

Thomas R. Hannon

Art Unit

3682

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 05 October 2006.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 11-13 and 15-28 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 11-13 and 15-28 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 04 March 2004 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

Art Unit: 3682

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 11-13, 17-19, 22, 25, and 28, are rejected under 35 U.S.C. 103(a) as being unpatentable over Hofmann et al. US 4,398,775 in view of Lindrose et al. 6,113,277.

Hofmann discloses a bearing device comprising a first bearing device (including inner race 2) having a first retainer (left half of retainer 6 in Figure 1) with a center axis (A) along a bearing center axis; and a second bearing (including inner race 3) having a second retainer (right half of retainer 6 in Figure 1) with a center axis along the bearing center axis; the first and second bearings are arranged one upon another in an axial direction along the bearing center axis; a plurality of first grooves are provided at an outer periphery of the first retainer and are arranged to have balls (4) disposed therein, a plurality of second grooves are provided at an outer periphery of the second retainer and are arranged to have balls (5) disposed therein. The first bearing includes a first inner ring (2) to support inner sides of the first balls, and a first outer ring (7) to support outer sides of the first balls; the second bearing includes a second inner ring (3) to support inner sides of the second balls, and a second outer ring (7) to support outer sides of the balls. The first and second inner rings are separate and discrete members. The first and second outer rings are not separate and discrete members.

The plurality of first grooves is constituted by N first grooves, and the plurality of second grooves is constituted by N second grooves (inherent in the alternating arrangement). Hofmann does not specify the precise spacing of the balls, however it is claimed by Hofmann that "one set

Art Unit: 3682

of balls and group of teeth is angularly offset from the other set of balls and group of teeth” (claim 3). Hofmann further describes the cage as “having two crenellated surfaces which define respective arrays of oppositely facing pockets for these bodies, the arrays being relatively staggered in peripheral direction for the purpose of saving space.” (Column 1, lines 51-54). Such an arrangement of respective arrays, and staggering fully anticipates the language of the claim.

Lindrose discloses a recording reproducing device with a head support device comprising a support arm having a slider and a voice coil coupled thereto, and a bearing device to rotatably support the support arm (Figure 1). The device including an outer sleeve (152) provided to support first and second outer rings of first and second bearings arranged one upon another in an axial direction, where the number of balls in each row of the retainer is three, and the inner races are separate and discrete members and the outer races are separate and discrete members. It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify Hofmann to provide the race members as separate and discrete members, as well as to fix the outer races in an outer sleeve, because this is taught and suggested by Lindrose as being a known arrangement of mounting and spacing radially adjacent ball bearings. With respect to claim 13, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the bearing arrangement of Hofmann such that the number of balls, and corresponding grooves in the retainer, to three, because this is taught and suggested by Lindrose as being the minimal number of required balls, thus minimizing the necessary preload force. With respect to the claimed inner sleeve, the shaft 1 corresponds to the claimed inner sleeve, as broadly reasonably interpreted. Note that claims 20, 23, and 26 support the statement that the shaft corresponds to the claimed sleeve, as these claims further define an axial hole, thus not

Art Unit: 3682

required in the claimed structure of claims 11, 17, and 19. With respect to claims 17-19, it would have been obvious to one of ordinary skill in the art at the time the invention was made to utilize the teaching of Hofmann in known devices requiring a duplex bearing, including that taught and suggested by Lindrose et al.

Claims 15 and 16 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hofmann et al. US 4,398,775 in view of Lindrose et al. 6,113,277 as applied to claim 14 above, and further in view of Albrecht et al. US 5,768,060.

Albrecht discloses a bearing assembly having the contact surfaces of the grooves on the inner and outer races with a radius of curvature that is greater than the radius of the balls. It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the races of Hofmann such that the raceway grooves have a greater radius of curvature than the balls, because this is taught and suggested by Albrecht as ensuring the balls make contact at a single contact point thus minimizing preload.

Claims 20, 21, 23, 24, 26, and 27 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hofmann et al US 4,398,775 in view of Lindrose et al. US 6,113,277 as applied to claims 11, 17, and 19 above, and further in view of Mouri et al. US 6,010,247. Mouri discloses a bearing device having first and second bearings with the inner races fixed to a shaft 9 having sleeve-like shaft body 9a, and the outer races fixed to sleeve 14. The shaft 9 of Mouri has a hole formed axially therethrough, thus corresponding to Applicant's sleeve. Moreover, the inner rings have the same shape, and the outer rings have the same shape. It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the bearing device of Hofmann such that the shaft includes an axial hole, for the desired purpose of

Art Unit: 3682

providing a sleeve body for mounting, as seen in Figure 14. Additionally, it would have been obvious to one of ordinary skill in the art at the time the invention was made to fabricate the races in the same shape for the desired purpose of simplifying assembly and reducing manufacturing costs.

Applicant's arguments filed October 5, 2006 have been fully considered but they are not persuasive. With respect to the added language to the remaining independent claims, Applicant states "The shaft 1 of Hofmann (as illustrated in Figs 1-3) is clearly not an inner sleeve as claimed. That is, a sleeve is well known to be a tubular part". However, the two terms are not mutually exclusive, first as illustrated by Applicant's dependent claims 20, 23, and 26, and second by the reference of Mouri, now applied to the dependent claims. Dependent claim 20, as a dependent claim must, further defines the structure of the previous claim, by adding the limitation of "said inner sleeve has a hole formed axially therethrough". Accordingly, claim 11, from which claim 20 depends, necessarily does not have such a limitation. The scope of claim 11 with respect to the limitation of an inner sleeve, is properly broadly interpreted to include structure corresponding to the shaft of Hofmann, as such a sleeve does not require an axial hole. Second, the reference to Mouri US 6,010,247 defines a shaft 9 having a sleeve-like body 9a by virtue of a bore or axial hole therethrough. The recitation of a sleeve in the claim does not preclude the proper application of a reference defining a shaft, as such a shaft can indeed define as sleeve, as shown by Mouri. Applicant's broad recitation of an inner sleeve in claim 11 is properly rejected by a shaft structure of the prior art. Applicant's further limiting structure of the "sleeve" as including an axial hole is properly rejected over Mouri. The same holds for the other independent claims and their corresponding claims reciting similar structure.

With respect to the spacing of the angular offset of the grooves of the retainer, Applicant submits “that, while Hofmann might disclose that the two sets of grooves are disposed in a staggered relationship, it does not disclose that, when viewed axially from above, the grooves containing both sets of balls 4 and 5 taken together are equally angularly spaced apart, as required by the above-discussed claim language. In other words, the disclosure of a staggered arrangement is not a disclosure that the first grooves and second grooves are staggered so that, when viewed from above, all circumferentially adjacent grooves are equally angularly spaced apart”. While there is no specific corresponding language in Hofmann, the structure claimed is necessarily encompassed by the disclosure of Hofmann. Hofmann does not show a view of the bearing axially, but shows a cross section in Figure 1. Figure 1 shows the staggered arrangement of the balls by showing the retainer having the oppositely facing arrays of axially open pockets, the arrays being relative staggered. It is to be noted that references are evaluated not only for what they expressly teach but also for what they would fairly suggest or render obvious to the artisan; In re Lamberti, 545 F2d 747, 192 USPQ 278 (CCPA 1976); In re McLaughlin, 58 CCPA 1310, 443 F2d, 170 USPQ 209 (1971); In re Shepard, 50 CCPA 1439, 319 F2d 194, 138 USPQ 148 (1963). The staggered relationship of Hofmann is for the purpose of saving space. One skilled in the art would realize that as taught by Hofmann, by staggering the balls it is possible to minimize the axial distance between the balls. Further, one of ordinary skill would realize the dimension of the cage material left between the staggered balls limits the limit of the distance between the rows of balls. As such in order to save the maximum amount of space, one of ordinary skill would stagger the balls such that the cage material between a ball from one row is equal on both circumferential sides to the adjacent ball in the adjacent row. This would

Art Unit: 3682

obviously maximize the saving of space. Absent Hofmann disclosing the spacing is not equal between the balls, one of ordinary skill in the art would conclude that the spacing is equal, as this is fairly suggested by the reference.

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Schwinghammer et al is cited as disclosing side-by-side bearings mounted either on shaft or on a sleeve.

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).


A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Thomas R. Hannon whose telephone number is (571) 272-7104. The examiner can normally be reached on Monday-Thursday (8:30-7:00).

Art Unit: 3682

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Richard Ridley can be reached on (571) 272-6917. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.


Thomas R. Hannon
Primary Examiner
Art Unit 3682

trh